CHAPTER 2

SITE SELECTION

2-1. General. Selection of a site is the most critical step in establishing a landfill disposal facility. For mobilization work the primary consideration is to dispose of solid waste as quickly and safely as possible. Therefore, concerns such as aesthetic, socio-economic, and ultimate use of the land factors will not be considered except where a direct effect on health-related factors will result.

2-2. Selection factors. Site selection for a sanitary landfill must be accomplished in consideration of the following:

a. Available land area. Based on the criteria presented herein, sufficient land must be available to service the 5-year design life of the mobilization facility. All zoning ordinances should be reviewed and cleared or changed to eliminate any legalities that could prevent or indefinitely hold up the use of a particular parcel of land for a sanitary landfill.

b. Haul distance. The landfill siting must be a balance between adequate distance from housing and work areas and economical haul distance. The landfill should be sited at least 750 feet from inhabited buildings and preferably so that prevailing winds are away from living areas. Adequate clearance from areas of brush and trees to prevent spread of possible fires should be provided.

c. Access to the site. Sites should be accessible to appropriate vehicles by all-weather roads leading from the public or mobilization camp road systems.

d. Vicinity of airports. Sites located in the vicinity of airports, where birds attracted to the landfill disposal facility could pose a hazard to aircraft, should be avoided.

e. Sites traversed by utilities. Sites traversed by pipes, conduits, or power lines should not be considered unless the relocation of the utility is feasible.

f. Soil and cover material. It is essential for satisfactory operation of the sanitary fill that soil conditions be suitable for preventing ground water pollution, excavating and covering the fill, and vehicle access. A soil investigation is required to determine the suitability of the area to receive the fill and the availability of cover material. Factors to consider in evaluating the soil are discussed below.

(1) Excavation. Generally cover material must be excavated, and the excavation thus formed often can be filled with solid waste.

Whether the excavation is for cover material or for a trench, it is desirable that the soil be readily excavated with the equipment available at the installation. Areas with shallow rock, hardpan, or large boulders will normally not be acceptable.

(2) Cover. Proper cover material must be available to seal the fill against infiltration and insure anaerobic conditions. An efficient seal will also control odors and prevent access to the waste by rodents and insects. Soil for cover material should not contain appreciable quantities of organic material and should be relatively free of stones larger than about 6 inches. The soil must be effectively compacted by equipment which is to be used in the operation. Soil with a relatively uniform particle size is not as readily compacted as soil containing particles with a wide range of sizes. Unless specially treated, pure sands, clays, or silts are not suitable for covering a sanitary landfill. The soil should support truck traffic throughout the year. The soil should be low in clay content for ease of changing moisture content and to avoid surface cracking. Generally a silty sand or clayey sand is preferable, but any soil which will form an effective seal is acceptable.

g. Topographic conditions. The local topography must be considered because it will affect the type of landfill operation to be used, the equipment requirements, and the extent of work necessary to make the site usable.

h. Surface-water hydrology. The existing natural drainage and runoff characteristics of the area under investigation must be considered. Therefore, the local surface water hydrology of the area becomes important. Other conditions of flooding must also be identified. Landfill disposal facilities should be located where the potential for surface drainage onto the landfill from adjacent land is minimal.

i. Geologic and hydrogeologic conditions. Geologic and hydrogeologic conditions are important parameters in establishing the environmental compatibility of the area for a landfill site. Although difficult to ascertain at times, data on these factors are necessary to assess the pollution potential of the proposed site and to establish what must be done to the site to insure that the movement of leachate or gases from the landfill will not adversely affect the quality of local ground water or contaminate other subsurface or bedrock aquifers. Highly permeable formations such as sand, gravel, porous rock, karst, and fissured bedrock are undesirable subgrades for sanitary landfills. More impermeable soils such as clay would be desirable if the material has not nor will not experience drying and cracking. For the preliminary assessment of sites, United States Geological Survey maps and state or local geologic data may provide useful information. Logs of nearby wells should also be reviewed.

j. Environmentally sensitive areas. Environmentally sensitive areas, including wetlands, 100-year floodplains, permafrost areas, critical habitats of endangered species, fault zones, and recharge zones of sole source aquifers should be avoided or receive lowest priority as potential locations for landfill disposal facilities.